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ABSTRACT

The focus of this paper is on the developing role of the still camera in the general scheme of education, and within the overall concept of visual literacy. A rationale and a workable definition for visual literacy are presented, together with a brief history of the visual message from the paintings on the walls of caves to the modern Land camera. Experiments using still photographs are reported from various educational sources with descriptions of design and results. Anecdotal materials on classroom projects which connect the camera and photograph to learning opportunities are also provided, and a bibliography is attached. (CMV)

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The Still Camera and the Resulting Photograph : Its History , Its Rationale , and Its Developing Role in Education

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Sheldon F. Katz

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> Psycholinguistic and linguistic anthropologists share a common concern with the relationship between language and thought. Several questions have been raised about this relationship, but the dominant one can be stated very simply: does the language we speak determine the way we think? One well-known attempt to answer the question is the linguistic relativity hypothesis also called the Sapir-Whorf hypothesis or the Whorfian hypothesis. In essence the hypothesis suggests that a given language, especially its grammar, provides its speakers with habitual grooves of expression which predispose these speakers to see the world in ready-made patterns....the world view of a speaker of a particular language will be different from the world view of a speaker of a different language.[1]

Marshall McLuhan takes this hypothesis one step ahead by stating that all media are, in some way, an extension of mankind[2] and, thus, the media of a society determine how one sees the world. In a print, or linear, dominate society one would tend to see the world in a linear, sequential mode. "Television babies" are those people , mainly in the United States and approaching thirty years of age or younger, who have been surrounded by the electric media of television, movies, wire-news photographs, and various projectors. These people, according to the McLuhan idea, see the world in a mosaic pattern. One mosaic in that pattern is the still camera and the resulting photography, which might be considered as important to the field of media as is the sentence to the field of linearity. John E. Warriner and B. Opdycke[4] seem to concur with the premise that all good writing, and this includes novels and other forms of literature, starts with the basic unit of the sentence. Therefore, both of those authors put a heavy emphasis on the nature of and usage of the sentence.

The contention here is that the still camera and resulting photography are essential in the curriculum of the schools of today in providing dynamic relevance and legitimate communication, means of storing and transmitting

culture, and tools for both visual and linear literacy. The photography is as vital to literacy, if not more so, as is the sentence. Mankind has always used a supplement to the world, and those visual aids have a long history. The exact date of when the first picture was painted is unknown; however, paintings from the prehistoric period have been discovered in widely separate places.

Mankind's first known works of visual communication were the carvings and paintings found within the last hundred years in the caves of France and Spain, particularly in the Department of Dordogne in Southwest France.[5] While other caves and rock shelters containing similar paintings have been found in that vicinity, as well as in Spain, the paintings from the cave of Lascaux have labeled that place as the "cradle of mankind's art." The high quality of the work suggests that the Lascaux paintings are at least 20,000 years old, with the possibility of being 10,000 years older than that.[6] The exact reason for prehistoric man to attempt those paintings is still unknown and will probably forever remain a mystery. One theory subscribes to the idea that certain powers were thoughts to be extracted from those paintings when a prehistoric man found the ability to make the likeness of another man or an animal. He may have felt that these powers enabled him to communicate with his god. This communication might be a suppliant to make him a more proficient hunter or to give him the courage and the strength of the animals he hunted. The point is that many thousands of years ago mankind added a picture to his culture and to his society as an aid in communication.

The evolution of the present-day photography has had a somewhat glamorous and more recent history. The 'camera obscura,' for example, had

been known since ancient Greek times.[7] The term is Latin for dark chamber and in its early form this was a simple pinhole camera with a translucent screen. While the inventor and the date of invention are not known, the device was used well over 1500 years ago to observe eclipses and as a communication aid in sketching from nature. At this point it should be noted that the word "photography" comes from the Greek terms meaning "light" and "writing."

The first published account of the use of the "camera obscure" as an aid to draftsmen appeared in Giovanni Battista della Porte's book, The Natural Magic, in 1558. Ten years later Danielo Barbaro, professor at the University of Padua and author of a treatise on perspective, showed that a more brilliant image could be produced by substituting a lens for the pinhole. Cameras became standard equipment for artist, and Count Francisco Algarott, in his "Essay on Painting" (1764), devoted a chapter to the camera.[8] About 1826, Joseph N. Niepce of France produced the first true, in the sense of permanancy, photography ever made. Louis Daguerre, a French artist, formed a partnership with Niepce and the latter's help worked out a process that later was named "daguerrotype." This led to the first public photographic process and the date usually mentioned is August 19, 1839. The first published description of the Daguerre method appeared in the London Globe, which arrived in the United States approximately one month later. Five Americans, more or less obscure, are credited with taking the first daguerrotype in this country, while Dr. John William Draper's picture of his sister, Dorothy Draper, is believed to be the first daguerrotype portrait. The now famous Land camera of the Polaroid Company, that was invented in 1947 and developed it own picture in seconds.[9] If

for no other reason than fascinating history, photography would be a compelling course in the schools.

It would seem that almost every civilized or semi-civilized culture has had an element of art. Whether one mentions the art described previously from the caves of France or Spain, or the militaristic state of Sparta, with its ornate shields and breastplates, or the American plains Indians, whose picture language was an art in itself, one may refer to culture described in its own time and which has been transmitted to this day in art, or, if one wishes, by visual means. The evolvement of the camera as an addition to the field of art and photography has become a major source of relating and transmitting culture.

Photography, or the still camera, is a visual means of communication and therefore part of the field of Visual Literacy. The rationale for the use of the still camera in the classroom, needs overall definition of visual literacy. That definition as agreed upon by the members of the National Conference on Visual Literacy is as follows:

> Visual literacy refers to a group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, and symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communication.[10]

Visual behavior is analogous to verbal behavior. A visually literate child can "read" statements with skill, perhaps with eloquence. That student can translate from the visual language to the verbal and, of course, from the verbal to the visual. There is a basic understanding of the grammar of the visual language, a realization that it parallels the verbal, and a familiarity

in the usage of the tools of visual communication. Furthe.', the student develops a critical sensibility towards visual communication. As Martin S. Dworkin points out, "Visual Literacy serves, among other things, as a symbol of an ideology of curriculum change, signifying revolutionary transformations of ideas of knowledge, and their articulation in institutions of society and agencies of communication.[11]

One cannot deny that the invention of movable type greatly contributed to the technological advances of western civilization, and one cannot deny the contribution of visual pictures to our civilization and culture. Before the invention of the printing press in the 1450's no one would have predicted that vast numbers of children might learn to read and to write words. Today, the education process in the western society rests primarily on the development and the use of linear literacy. Indeed, most school districts base the curriculum on speaking, reading, and writing. Similarly, before the "omniscience" of television, it was difficult to predict that students would have need to read and to create visuals. Granted that most books contained pictures for students, but those pictures were easily interpreted through the contex: of the book, and the student had rare opportunity to display any creativity or imagination concerning the pictures. A map in a geography book, however inaccurate, was a shorthand method of describing the area under discussion. Students did come to realize that a picture was a representation of <u>someone</u> and a something. These representations were produced by the publishers, and any message there in was dictated by the author. Pictures and photographs were present in almost all textbooks and recognized as an aid to the learner.

Today visual literacy could well include not only the reading of

photographs, seeing movies, and being surrounded by television, but also the reading of X-ray films and recognition of international road signs. The National Conference on Visual Literacy feels that photographs are a part of the electronic revolution that hit its stride in the 1950's when television really "came into its own."[12] The first pictures of television were sent and received in the 1920's, but it was not until the end of World War II that any great gains were made with that medium. In approximately one-quarter of a century, television has abruptly altered the Western culture. Professor Charles Winnick of City College of New York, and authority recognized by educators and congressional committees, states that investigation shows that 98% of all homes in the United States have television sets and that there are more television sets than there are telephones and bathtubs. He goes on to state that the average viewer sees six hours and fifty minutes of television daily. The influence of television on students is easily understood when one realizes that the pre-school youngster is exposed to four to seven hours of television per day and that television viewing might begin at the age of nine months.[13] On the other side of the coin, there is no attempt here to deny the importance of the written word, but to suggest that information and education have now been transformed into a mosaic pattern with each section of that mosaic equally important. Society still stores and transmits most information through the written and verbal mode. Although there has been a decrease in the actual number of newspapers available,that part of the print media is still a major source of reading information for all adults who have finished school. The popularity of the paperback book has triumphed and the United States Postal Service is still doing volume business. The linear mode, though

no longer shackling, lives.

Media usage in the school, is not restricted to a 16 mm projector and a travelog film on a rainy day, and the textbook is not the sole source of information. Children see as much as 5000 hours of television before entering kindergarten so they seem to prefer education through visual means. Each student, then, entering school comes visually prepared for learning. It would seem natural that the schools would encourage the introduction of visual materials, invitations for the youngster to create visual materials, and development of visual literacy. When Joseph Bruner listed material designed to present the student with experience not normally available in schools, he included films, T.V, and photographs among others. He labeled these "devices for vicarious experiences."[14] Bruner further stated that his colleagues Gerald Holton and Edward Purcell experimented with instruction in visual pattern to increase the visualizing capacity to represent events visually and non-metrically. He does believe that educators have not begun to scratch the surface of training in visualization--whether related to the arts, to science, or simply to the pleasures of viewing one's environment more richly.[15]

Before describing and explaining projects in schools that emphasize visual literacy in general, and photographic assignments in particular, it might be well to deal briefly with the problem for the place of such items in the modern classroom.

> The current effort to turn the clock back in education is a real cause for alarm but not for surprise. The educational system is part of common life and cannot escape suffering the consequences that from the conditions prevailing outside the school building. When repressive and reactionary forces are increasing in strength in all our other institutions--economic, social and political, it would be folly to expect the school to get off free.[16]

The above statement by John Dewey could well have been written concerning the current turmoil in the schools. This controversy, set off by the spiraling costs and less money available, has resulted in many programs curtailed. John Dewey, who called for neither a wholesale condemnation of the "old" education nor the unquestioning embrace of the "new" education, reminded educators that experiences of a student's environment, or culture, were items to be reckoned with and asked his educators, "How many pupils came to associate old fashioned book learning with dull drudgery?"[17] This author agrees with the comments of Dewey and with the oft-quoted statements of Marshall McLuhan that "students interupt their education to attend school" and that "the children of today are being asked to do the work of today with the tools of yesterday." The still camera, is a modern tool and its use in the school is by no means a "frill" but rather a necessity.

During the past twenty years a number of linguists, semanticists, and even psycholcgists began to explore the visual language with less prejudice than perhaps their predecessors. As Roger B. Fransecky noted, several in that number suggested that to consider the word predominent in an increasingly visual culture is to be in the position of those tenacious, aggrieved spirits who continue to envision the already circumnavigated world as a flat table.[18] Fransecky states further that he found in the works of Adelbert Ames, Jr., Ernst Cassiere, Benjamin Whorf, and the philosopher Colin Murray Turbayne, in addition to others, a serious attention to the nature of the visual experience and an attention to the importance of understanding how visual signs can influence our perception of reality.[19]

In writing for the magazine for the Society for General Semantics, John L. Debes, the "Father of Visual Literacy" and a strong advocate for the role of the still camera in educational institutions, made three strong points. First, that in intentional communication about a semantic process one can communicate verbally, visually, or in other ways; second, that there are many parallelisms between the visual communication and the verbal communication; and finally, that the process of making abstractions from reality is much the same whether one uses the verbal path or the visual one.[20]

Charles Carpenter Fries, with his structural linguistics concepts, paved the way for looking at parallelisms between visual and verbal structure. One conclusion that Fries reached was that in English almost any word can function in almost any grammatical role. There is no such thing, to Fries as a subject or a predicate word or an object word. Statements merely consist of subject elements, predicate elements, or object elements, and these may be either single words or clusters of words or implied words. Thus, Fries provided a use-centered or meaning--centered approach to language or communication structure.[21] In visual statements also, approximately the same image element can occupy either a subject role or an object role.

The Visual Motivation Company of Bala-Cynwyd, Pennsylvania, in 1973 provided a grant to study the effects of visual experiences, by means of photographs provided by a still camera, on the reading readiness of kindergarten students. The study was not trying to break new groundwork in the actual use of photographs, since the still camera was a current tool in the classroom. Perhaps the parties involved had read the 1932

prophecy of the noted Hungarian artist, Moholy-Nagy, to the effect that "the illiterates of the future will be ignorant of the uses of the camera and pen alike." The purposes of this study was to determine after a two-year planned photography program, whether reading and language development of kindergarten, and then first grade learner, would be greater than, the same, or lower than learners not in the program.[22] The students were provided with a camera and film and given objectives for photographic subjects was employed. Once the student had produced the required visual stimuli, the teacher reproduced, on a separate sheet of paper, the comment of that student concerning the pictures.

At that level, the learner's verbal vocabulary is more sophisticated than the reading vocabulary. This is, of course, to be expected. Through the above procedure the student becomes exposed to a vocabulary which can be verbalized while not having a grasp on spelling or reading. Dr. R. A. Senour of California State College was in charge of the research for this program which was devoted to the improvement of oral and written communication. Twenty-eight students were selected for the experimental group. The school district selected has a 31% Mexican-American population and ten of twenty-eight subjects in the experimental group had Mexican-American surnames. The experimental group was specifically chosen because scores on reading readiness scales by Mexican-American students historically have been lower than in an Anglo population. The experimental group were all members of one class in the elementary school selected for this study, while the control group were members from another kindergarten class in the same school. Officials at the school

agreed not to mix up the classes at any time during the process of the study.

The groups used the Metropolitan Readiness test Level L, form A, for both the pre-test and the post-test.[23] Following the pre-test the experimental group of twenty-eight students was shown how to hold the camera, aim through the viewfinder, and press the shutter trigger gently. The students took two walking tours, during the autumn, as orientation sessions for picture taking, and eight picture-taking sessions scheduled for each of the two years. After the student dictated the story, it was usually typed on another sheet of paper. The snapshot for that story was affixed to the top of the page, and the culminating event was placing those pictures and pages into an individual book for each youngster in the experimental group. The following table indicates the results of pre- and post-tests using the Readiness test mentioned previously. Raw scores were used to derive the mean difference.

TABLE I

	N	Pre-Test	N	Post-Test	Mean Differences
Experimental Group	27	36.51	22	73.50	36.99
Control Group	32	57.50	16	75.06	17.56 (24)

There was mean growth difference in the experimental group of approximately 19 points. Since both the experimental and the control groups were chosen from the same elementary school, and with the absence of homogeneous groupings, it was assumed that the socioeconomic backgrounds as well as intelligence of both groups were on a par. Senour noted the large difference between the two groups in the pre-test, but

he felt that such a difference did not negate the results.[25] Arnheim has stated that "visual education" must be based on the premise that every picture is a statement.[26] The students made their statements with the pictures they had taken. This ties in the original rationale that the visual medium is a major source in collecting, storing, and transmitting a culture. The notion of using pictures as stepping stones to reading and writing is neither new nor solely and American creation.

Paulo Freire of Northeast Brazil developed a process that produced literacy, mainly for adults, in thirty to forty hours of seminars.[27] Freire, who received his Ph.D. from the University of Recife in 1959 and who had accumulated about fifteen years of experience in the field of adult education, envisioned university education as a commodity available to all persons and not just open to the rich and the educated that the Brazilian culture catered to in those days. Freire believed that reading was a political act and that reading led to political participation. In 1960, despite many campaigns to wipe out illiteracy in the region of Recife, Brazil, there were over 80,000 children between the ages of 7 and 14 who did not attend school and adult illiteracy was estimated at 60 to 70 percent. The basic premise was that adults could learn to read faster if reading was not part of a culture imposed on them. Adults spoke a complex language which they could set down through pictures, or graphically, if they were only given the tools to do so. Many Brazilian nonliterates were not aware of any procedures that might change their own position in life.

In order to change this passive concept, Freire introduced the

anthropological concept, that is, the distinction between culture and nature. Coordinators, not necessarily teachers, would come into an area and investigate the local culture in terms of a basic vocabulary. Freire would then select pictures for this project. Meetings were held every week night for six to eight weeks with the first two to eight sessions devoted to analyzing the photographs that illustrated the distinction between culture and nature. Selective words from the local vocabulary were introduced and those words were called "generative" in that such words could generate discussions among the nonliterates and by breaking the words into syllables and rearranging those syllables the nonliterates could generate other words and transcribe their own words. The above process, used in the Northeast region of Brazil from 1960 until the military government imprisoned Freire in 1964,[28] is clearly illustrated in the account of the speech classes that Stokley Carmichael held for field workers of the Student Nonviolent Coordinating Committee in 1965.[29]

In Berkeley, California, a number of elementary school teachers in the public sector adapted the ideas and methods of Freire for their own situation. These teachers are associated through the Centre for Open Learning and Teaching. The school census for Berkeley in 1974 listed the following breakdown of students: 44.7% Black, 6.2% Asian, 0.2% Chicano, and 0.1% Indian, and 1.7% other.[30] The economic range was varied as were the diversities due to interracial marriages, migrant families, and the like. Where Freire started with adults and filtered down to children, the Centre in Berkeley was interested primarily in the children situated in the public schools. Brenda Bay, a director of the Intercommunal Youth Institute and an instructor for student teachers in the elementary credential

programmer of the University without Walls-Berkeley, reported repeated success with an adaptation of the Freire system. Students took their pictures for a "show and tell" situation in order to tell and show about their particular culture and environment. Pictures were introduced to expand the student's knowledge and viewpoint of the world in general. Common words were then explored and all of the student engaged in reading and writing exercises. Photographs were used constantly for reinforcement of learned skills and to introduce new material.[31]

Also working through the Centre for Open Learning and Teaching was Herbert Kohl, a most prolific writer concerning education. In 1974, Kohl was teaching Kindergarten-first grade at the Hillside Primary School, a Berkeley public school, and as a colleague of Brenda Bay, he was instructing student teachers for elementary credation at the University Without Walls, Berkeley, after teaching fourth through sixth grades in the Harlem area of New York City, Kohl was appointed principal of the first alternative junior-senior high school in Berkeley. To quote Herbert Kohl:

> Certainly there is no reason why the stuff that Freire used with adults cannot be used as the very basis upon which to begin to teach reading to young children. You know, the idea that you go into the community and analyze not only what words and concepts are visually present by what ideas and relationships are of most interest are most charged. That is, you can build visually for the kids who will then build on all those things as a way of doing things.[32]

Kohl reported that he uses much of the Freire system with his own students and that he encourages his student teachers to explore this avenue of education.

During the scholastic year of 1969-70, the Buffalo Public School district gave birth to a visual literacy infant named Project Early Push. According to Carl F. Schary, the coordinator of the Home-School Relations

of Project Early Push, this particular project revolved around the use of photographs taken by four-year-old children, their parents and/or guardians, and their teachers. Schary noted further concepts, language skills, and refinement of not only visual skills but also each of the basic human senses.[33]

Color photographs were mainly used and those photographs were taken with easy-to-use instamatic cameras. While color photographs did add excitement, depth, and quality to this program, the ease and cost of developing the color photographs commercially favored them over black-and-white ones. Seventy-five percent of the photographs were taken by the four-year-olds and the children demonstrated that they can successfully use a camera and that they do learn as they talk about the photographs they have taken. The Superintendent of Schools of the Buffalo School District, Joseph Manch, made the following statement:

> Yes, the four-year-old can successfully use and learn from using the instamatic camera. It fascinated me to observe that the four-year-old with brief instructions from me easily handled cameras much more difficult to operate than their "easy-to-use" instamatics. My visits to the classrooms have been rewarding. I have observed the children developing positive self-concepts and language skills, both of which relate to success in school. I urge the entire Early Push staff to use Visual Literacy as a key component of their nationally noted instructional and parent/guardian participation programs.[34]

A summer photography project has been instituted by the Greece Central School District No. 1 in Greece, a suburb of Rochester, New York, and over 2,000 students have participated in this project. The project was started partially due to the experiences of Ruth LaPoit, Supervisor of Language Arts for the Greece District. She found that youngsters of five to eight years old could not put into sequence more than a few ideas in written or

oral expression because their sequential memory and visualization ability is inadequately developed.

The results of the Regional Summer School, as the project was officially labeled, showed that when these youngsters planned, shot (photographs), and sequenced their own series of photographs to tell a story, they doubled or tripled the number of ideas they could order successfully. A major objective of the project was the correlation of written work with the photo stories. LaPoit concluded that the use of cameras and of photo stories encouraged student participation, self-direction, and self-evaluation in that language activity.[35] Richard Edgett, Coordinator for the District indicated that the photographic project will be incorporated into the regular curriculum of the district for the primary grades and that such plans to expand that program attest to the success of the program with the youngsters and the teachers.[36]

"Project Beacon" was a similar program in operation in the primary grades at Clara Barton No. 2 on Rochester, New York. At this "inner city school" project director John Franco and school principal C.P. Lambert reported, one year that originally of all children entering the first grade at Clara Barton No. 2 only four pretested and picture taking program, a majority of the students were reading well into the third level and, by comparative tests, those students topped fourteen other first grade classrooms including six with exceptionally low student-to-teacher ratios and two from higher socioeconomic areas.[37]

The Higher Achievement Program (HAP) concerning visual literacy and photographic work, was installed in the McQuaid Jesuit High School in Rochester, New York. In order to test, on a limited scale, the validity

of such a program, a controlled experiment was set up under the supervision of Gerald W. Jaromin of the school's English Department. The students were pretested with SCAT (School and College Ability Test), a test of verbal usage, and a grammar test set up by the English Department. From that testing, two heterogeneous groups were set up consisting of 23 students each. The control group used a traditional grammar book while the experimental group used only visuals, primarily photographs, and a camera. The experimental group was involved in a four-step process. Steps 1 and 2 - Matter was presented visually and its visual equivalent was evoked.
Step 3 and 4 - Visual exercises were presented with their visual equivalents.

In steps 3 and 4, a major portion of the visuals was created by the students. In steps one and two, the subheadings were used: "Making Sense Visually," "How Does a Picture Mean?" "Rhetoric of Photographic," and "Photo Stories." All students involved according to post-testing results, has progressed at the same rate. However, in the field of composition, the experimental group showed a great superiority over the control group. The traditional group dreaded compositions and turned in the minimum amount of work while the experimental group toiled longer and with more effort at revision, and thus the quality of work was usally rated "excellent" Jaromin concluded that motivation due to the still camera and the resulting visuals was the key. He stated that while both groups "learned grammar" at the same rate, the photographic group enjoyed it and, as a result, was easier to instruct. That group wrote compositions because they <u>wanted</u> to and they found that learning could be relevant

and could be fun.[38]

Another successful project was reported by the Oxford Hills High School in Paris, Maine. The school, under the direction of Richard L. Knudson, drafted a proposal for a program that resulted in a Title III, E.S.E.A. grant. The program was entitled "Specialized Language Activities for the Rural Disadvantaged: An Approach to Reach the Slow learner." Knudson claims that the basis for the grant and the success of the project was due to the elements of photography and the visual literacy therein.[39]

A final example of the photographic approach was used by Lon Nuell, an art educator, and Jerry L. Fryrear, a psychologist, both of Middle Tennessee State University, to investigate the possibility of enhancing the self-concepts of juvenile delinquents.[40] The subjects were black and white youths between the ages of 13 and 16 who were incarcerated at Spencer Youth Center, Nashville, Tennessee. They were screened with the Tennessee Self-Concept Scale (total, physical, social, family, moral ethics) scores. Those adolescents who scored below the 50th percentile on the total self-concept scale and as low or lower on the physical self-concept scale of the TSCS were included in this study. The forty delinquents who met this criteria were equally divided into a control and experimental group. Over a five week period the experimental group worked with the instamatic camera and was mainly engaged in taking pictures of planned and unplanned poses. The other group made scrapbooks containing pictures from magazines and they were assisted in cutting out and pasting pictures or motorcycles, cars, airplanes, and other items of interests. The experimental group also made scrapbooks, and this one

contained the pictures taken and appropriately labeled. That scrapbook had at least 43 pictures of the subjects and the control group had at least 60 pictures cut out from magazines. At the end of the five-week period, the subjects were again tested.

TABLE II

	Total self-concept		Physical self-concept	
	pre-test	post-test	pre-test	post-test
experimental *	296.44	308.75	62.94	66.37
control **	306.36	301.29	62.79	62.36

* Interaction at .10 significance
** Interaction at .25 level

Nuell and Fryrear concluded that the self-concepts of juvenile delinquent can be appreciably enhanced through a program of photography that provides the subjects with planned and unplanned visual images of themselves.

Another line of research that should eventually have a profound effect in the realm of education is the hypothesis that the brain is divided into left and right hemispheres. The main thread of this hypothesis is that the left hemisphere of the brain stores and utilizes information mainly of a linear nature while the right hemisphere is more spatial and more conceptual in its duties. Orenstein, in the book Psychology of the Conscious, uses anecdota material, personal observation, and some experiments to support this hypothesis. Orenstein links this with cultural experiences, he strongly suggest that the Western cultures are producing persons who function mainly with the left hemisphere of the brain and are thus linear-oriented while

Eastern cultures produce people who operate with the right hemisphere of the brain and are therefore more spatial in their nature, In fact, Orenstein calls the Easter philosophies "esoteric psychologies" in demonstrating the differences with Western psychologies.[42] No value judgement is implied. Should the hypothesis of the hemisphere be extended to education, it might be said that Western cultures are producing "one-half educated" students. The heavy reliance on facts and figures in most curricula might give way to the learning of concepts, images , and philosophies at all levels in education.

The idea that the right hemisphere is the seat of visual language and visual literacy is supported to an extent in the case history of Albert Einstein. B.M. Patten, author of that case history, spoke of Einstein as "manifesting visually medicated cognition."[43] Patten cites Dr. Wertheimer, that Einstein thought almost exclusively in pictures and images. Patten feels that one reason for Einstein's lack of scholastic success was due to the fact that he was a non-verbal person. Einstein started to register accomplishments when his parents placed him in a Pestalozzi school. Pestalozzi was a Swiss educator who founded schools in the 1880's on the concept that "thinking is visual."[44] Patten suggests that similar possibilities of visual thinkers might be found in the cases of Leonardo de Vinci, Thomas Edison, Steinmetz, and others. The appeal to the right hemisphere of the brain might well explain the continued success of the visual literacy programs mentioned previously and the usage of the still camera and resulting photographs.

Dr. Norman Geshwind, a neurophysiologist, discussed aphasias in a 1972 medical article,[45] and he referred to the condition that occurs

when a person who is literate in English has left hemispheric stroke and consequently loses the capacity to read or write in English. Dr. Geshwind makes it clear that he agrees with colleagues who preceded him that the reading and writing of English rests in the left hemisphere of the brain. Now it is an important fact that spoken Japanese is represented by more than one symbol system and that one system is Kanji, where the symbol represents an idea rather than a sound. Japanese is also represented in another way called Katakana, where the symbol represents a sound. Dr. Geshwind reports that when a Japanese person also has a left hemispheric stroke, that person will lose the ability to read and write in Katakana, that system in which the symbols represent the sound just as English symbols represent sound. However, that person does retain the ability to read and write in Kanji. It would seem that schools which ignore the unlimited potentials of visual language experiences for students are also ignoring the reservoir of learning opportunities available for those students.

Evidence by observation, anecdotal material, and testing seems to be overwhelming to show that learning opportunities are increased through the use of visuals. John L. Debes notes that the Stanford-Binet scores (for the so-called I.Q. tests) have increased in children from the ages of 2 to 8 years of age. Children of today seem to know more than a similar peer group of twenty years ago. Debes used an investigation by Dr. Robert Thorndike of Columbia's Teachers College to show that an item-by-item analysis of those questions on the I.Q. test that causes the rise in scores were visual or at least non-verbal items.[46]

In the Early Push program, mentioned previously, in the Buffalo, New York area, the black children who were exposed to more television

than their white classmates and who had more visual experiences in the pre-kindergarten classrooms, scored higher than their white peers in body language, visual memory, and visual closure. The instrument used was the Illinois Test of Psycho-Linguistic Abilities.[47] The visual experience of those black children in Project Early Push was based, of course, on the use of the still cameras and photographs. The thrust of this paper has been dedicated to the placement of the still camera and the photograph into the curriculum for all students. A mosaic pattern in the classroom[48] is the immediate goal at this point for education. Such a pattern for a classroom does not negate the linear-type of education that exists today. In creating technological-type of society, the western culture is obviously in need of educated persons to carry on and to expand this special type of society.

However, the still camera is an excellent tool that combines the best of "both worlds" so to speak. Students are asked to produce a story without words using photographs that the students themselves take. First, the student must visually conceive of a story and then make a story board for this project. That is, the students must lay out a rough sketch in sequential order in order to (1) have an outline of the story; (2) know that a story will result from the photographs to be taken and (3) know what photographs must be taken rather than take random snapshots. The student is in charge of the entire production, with the exception of developing and printing the film. Cameras and film are provided for students unable to secure their own material.

After the photographs are taken by the students, and the film developed and printed, it is necessary to lay out the prints insequential order,

usually on oaktag, in order to complete this project. One might conceive of the complete project as a paragraph produced by the student and that each of the photographs is a recognizable sentence, or statement, on its own. Once the student has completed the project, the story without words is brought into the classroom and displayed for all to view. The student is both able to use concepts in this project and to see the results of sequential arrangements. Success of this type has been reported in this paper regarding other projects.

Variations on a theme may be used to have the student do a study of his/her own environment. That type of photographic assignment lends weight to the idea of self-esteem, for even the students from the lower economic areas are pleased to show off friends, relatives, play areas, and such. The environmental-type project not only found favor on the junior high school level[49] but also with elementary school children of wide socioeconomic range in Toronto, Canada.[50] One other project in the mosaic classroom is the use of the camera for book report. One of the major difficulties for students is learning plot line of a particular book. A plot line might be conceived to be the background, or opening, of the book, the incentive moment, several crises, the climax, and the resolution or tying up of loose ends. The students must photograph scenes they believe correspond to the required parts of the plot line. Again, the youngster combines linear and visual experiences to produce and complete the project. From observation, such a project produces student who understand what is a plot line and who actually want to read more books.

The attempt there has been to show that the still camera and the

resulting photograph are basic to literacy, both linear and visual. The visual form has its roots in prehistoric days as a means of storing and transmitting a culture and as a communication aid. The camera itself is by no means a new tool, and with the electric media of radio, television, and the movies, has an impact on the current in-school generation and demonstrates that educational institutions must alter the ancient curriculum. Indeed, the visual literacy of today might well be the basis of education for tomorrow, with the still camera and the resulting photograph as a basic unit. Research, experiences, anecdotal material, and testing have shown that the use of the camera and the photograph enhance the educational experiences of students from the pre-school age up to adults in the classroom. By opening horizons of creativity and imagination, the still camera helps students to explore and to understand their own environments and their own cultures while being introduced to, and understanding, the environments and cultures of other peoples. Finally, the still camera, in addition to being essential to the learning of literacy, might well inject enjoyment into the educational curriculum.

Footnotes

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